

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of October 29, 2009 is respectfully requested.

The Examiner rejected previously-pending claims 22-37 in view of the prior art. However, the Examiner indicated that claims 38 and 39 are allowed, and the Applicants acknowledge this indication of allowability. Remaining independent claims 22, 32 and 35 have now been amended, and new dependent claims 41-43 have been added. For the reasons discussed below, it is respectfully submitted that the amended claims are now clearly patentable over the prior art of record.

In the outstanding Office Action, the Examiner asserted that previously-pending independent claim 22 was unpatentable over the Wang reference (U.S. Publication 2002/0153246) in view of the Mizuki reference (EP 1 167 583); and also asserted that independent claim 22 was unpatentable over the Oberlitner reference (USP 7,294,244). However, it is submitted that these prior art rejections have been overcome in view of the amendments to independent claim 22.

As illustrated in Figure 3, amended independent claim 22 is directed to an electroplating apparatus 170 for plating a workpiece W. The electroplating apparatus comprises a plating tank 186, an anode 214 in the plating tank so as to be immersed in the plating solution held in the plating tank, and a holder 160 for holding the workpiece W and bringing the surface of the workpiece into contact with the plating solution held in the plating tank 186.

As now further recited in amended independent claim 22, the plating apparatus also comprises a *fixing plate 224 having an opening 224a therein*, and the fixing plate 224 is arranged so as to divide an interior of the plating tank 186 into an anode compartment accommodating the anode 214 and a workpiece compartment accommodating the workpiece W held by the holder 160. A ring-shaped nozzle pipe 220 is *fixed to the fixing plate 224* in the plating tank so as to be immersed in the plating solution held in the plating tank 186, and the nozzle pipe 220 is shaped to extend along an outer profile of the workpiece W and has a plurality of injection nozzles 222 for injecting the plating solution toward the surface of the workpiece W (see page 19, line 6 through page 20, line 30 of the original specification).

In the outstanding Office Action, the Examiner asserted that the Wang reference teaches a nozzle pipe which has a plurality of plating solution injection nozzles 4, 6, 8. However, the Examiner acknowledged that the Wang reference does not teach a nozzle pipe that is ring-shaped and located in a plating tank so as to be immersed in the plating solution, and which is shaped to extend along an outer profile of a workpiece W.

In view of the above deficiencies, the Examiner asserted that the Mizuki reference teaches “ring-shaped nozzles” which are “spaced apart along an axis of the pipe,” and referred to Figure 26. While Figure 26 illustrates a pipe for supplying plating solution to a shower head 341, this figure does not teach or even suggest a *ring-shaped pipe*, as required by independent claim 22. Instead, the nozzles 343 identified by the Examiner are located within a plate (shower head) 341.

Furthermore, the combination of the Wang reference and the Mizuki reference also do not teach or even suggest a fixing plate having an opening therein, and arranged to divide an interior of a plating tank into an anode compartment and a workpiece compartment as recited in independent claim 22. Therefore, it follows that the Wang reference and Mizuki reference also do not teach or even suggest a *ring-shaped nozzle pipe that is fixed to such a fixing plate*. Because the Sasaki reference and the Oberlitner reference, as well as the remaining prior art references of record, do not teach or even suggest this arrangement, it is submitted that amended independent claim 22 is clearly patentable over the prior art of record.

The Examiner asserted that previously-pending independent claim 32 was unpatentable over the Oberlitner reference (USP 7,294,244). However, it is submitted that this prior art rejection has been overcome in view of the amendments to independent claim 32.

As illustrated in Figure 18, amended independent claim 32 is now directed to a plating apparatus that comprises a plating tank 611 and a stirring mechanism 620 having a plurality of *solid* stirring vanes 619 arranged at respective positions facing the surface of the workpiece W. Each of the stirring vanes 619 is reciprocally movable parallel to the surface of the workpiece W *within a region different from regions of the other stirring vanes 619* to stir the plating solution within the region different from the regions of the other stirring vanes. Each of the stirring vanes has irregularities on at least one side thereof for generating swirls in the plating solution when the stirring vane is reciprocally moved.

The Oberlitner reference teaches a processing reactor having a paddle assembly 132, as illustrated in Figure 16. As illustrated in Figure 19, the paddle 132 has channels 154, 158 formed therein, and therefore is not solid. Furthermore, the Oberlitner reference discloses only a *single* stirring vane, and does not teach or suggest a stirring mechanism having a plurality of stirring vanes arranged to *reciprocate in different regions* as recited in amended independent claim 32. Because the remaining prior art references of record also do not teach or suggest a plating apparatus as recited in amended independent claim 32, it is submitted that amended independent claim 32 and the claims that depend therefrom are clearly patentable over the prior art of record.

The Examiner asserted that previously-pending independent claim 35 was anticipated by the Sakaki reference (USP 6,875,333). However, it is submitted that this prior art rejection has been overcome in view of the amendments to independent claim 35.

Amended independent claim 35 is directed to a plating apparatus that comprises a plating tank 611 and a stirring mechanism 620 having a plurality of stirring vanes 624, 625. As illustrated in Figure 20A, the plurality of stirring vanes 624, 625 extend *vertically* within the plating tank, and have respective tip ends 624a, 625a which are *aligned with each other such that the distances between the stirring surfaces of the stirring vanes 624, 625 and the surface of the substrate W are equal* (see page 34, line 32 through page 35, line 22 of the substitute specification and abstract).

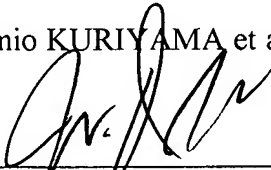
In the outstanding Office Action, the Examiner asserted that the Sakaki reference teaches a plating apparatus with a stirring mechanism having a plurality of stirring vanes 41, 80. As illustrated in the cross-sectional view of Figure 7, however, the Sakaki reference does not teach or suggest a plating apparatus with stirring vanes configured as now recited in amended independent claim 35. In particular, the stirring vanes 41, 80 identified by the Examiner clearly do not have *tip ends which are aligned with each other such that the distance between the stirring surfaces of the stirring vanes and the surface of the substrate are equal*. Furthermore, the remaining prior art references of record also do not teach or even suggest the stirring vanes arranged as recited in amended independent claim 35. Accordingly, it is respectfully submitted that amended independent claim 35 and the claims that depend therefrom are clearly patentable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

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